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quented places. Several nests were found in the east central part of the State, which were loosely built between the prongs of small forked branches; the sides were plaited about these prongs, and the nest bottom was so thin that the eggs could be counted through it. The nests were also very flat so that care was necessary in collecting them to prevent the eggs from rolling out over the sides. Two nests taken in Adams County were very interestingly constructed, being composed entirely of Spanish moss woven between the prongs of small elm forks. A surplus of moss was used so that long beards or streamers of it hung down for a length of eighteen inches below the actual nest. This arrangement gave the exact appearance of ordinary bunches of this gray moss hanging from the branches. Both nests would have been passed unnoticed but for the fact that the birds flew off as I passed under the limbs. The extreme dates for noting eggs of this species were May 4, 1898, and June 19, 1901.

45. *Cyanocitta cristata*. BLUE JAY.—With the exception of the English Sparrow the Blue Jay is probably the most abundant bird in the State. The shade trees bordering the streets of towns, the groves near dwelling houses, trees along road sides, orchards, pastures, and pine woods as well as thick woods, are nesting localities of this bird. One nest was placed in a tree crotch not more than six feet from a bed-room window, thus one might look out on the bird as she sat calmly upon her eggs, and later she was not noticeably nervous while feeding her nestlings before an audience of several persons who observed the performance from the window.

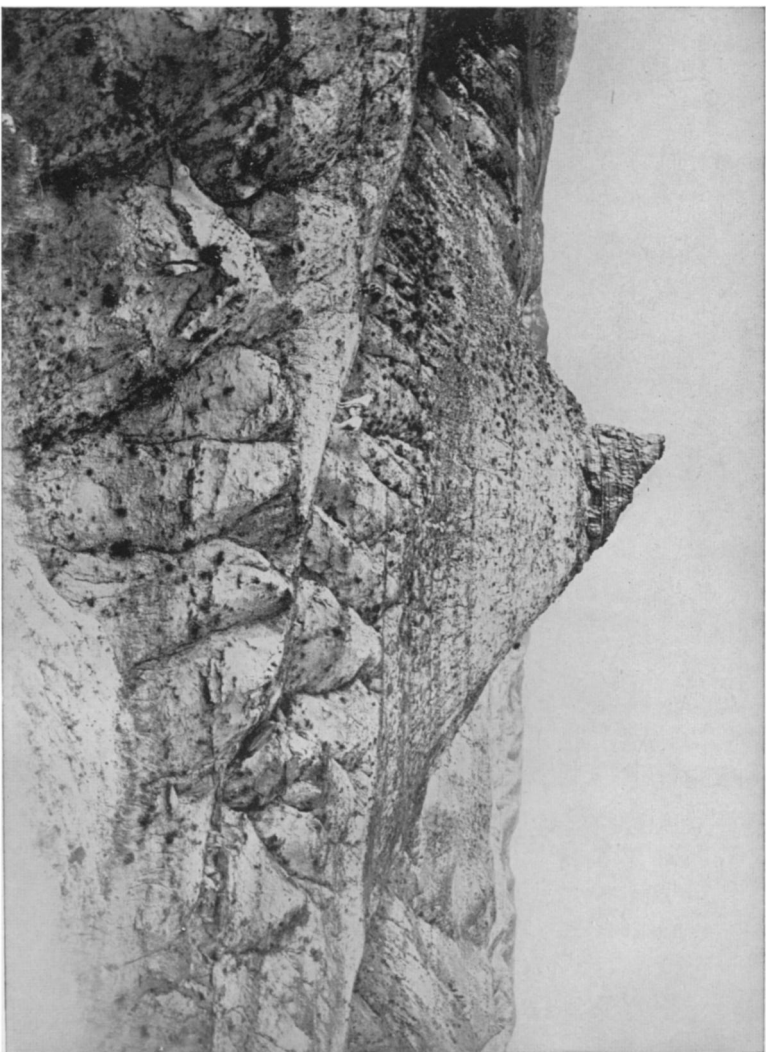
(*To be concluded.*)

NESTING OF THE GOLDEN EAGLE IN MONTANA.

BY E. S. CAMERON.

Plates II-VI.

FOR two years (1903-04) a pair of Golden Eagles (*Aquila chrysaetos*) have nested near my ranch on the north side of the Yellowstone, opposite Fallon on the Northern Pacific Railroad; and during 1904 I was able to keep the birds under constant observation. The nest was first discovered at the end of June, 1903, owing to the boldness of one of the parents which carried away a lamb in presence of an indignant shepherd who followed to ascertain the fate of his charge. He thus found the eyrie, along with two fully fledged eaglets; and succeeded in ruthlessly



SITE OF GOLDEN EAGLE EYRIE. IN THE BADLANDS, TERRY, MONTANA.

killing one, although the female made good her escape by flight. I felt convinced that the eagles would use the eyrie again, and obtained a promise from the man's courteous employers (Undem Bros.) that the eagles should not suffer further molestation no matter how many lambs they might destroy. It is a curious fact that although the birds had carried off several lambs prior to the death of their offspring, they took none thereafter, and in 1904 entirely abstained from the practice, a proceeding which, with sheep all around them, I cannot explain. It seems difficult to believe that they connected their loss in 1903 with the theft of lambs and avoided a woolly prey in consequence; but, in the absence of any other explanation, I am inclined to pay this compliment to the extraordinary intelligence of the birds.

The eagles' eyrie was situated near the top of a scoriaceous rock in the badlands, a crimson pillar which crowned a high butte sloping abruptly to deep washouts. The upper part of this column consisted of easily detachable pink layers, called laterite by geologists, but scoriæ of every color strewed the base which rested on red ochre clay reminiscent of a painter's palette. Placed in a hollow niche of the wall face the eyrie was entirely enclosed and sheltered on three sides by a dome of rock. On the fourth, and open side, the enormous sunken nest greatly overlapped the seemingly inadequate ledge, which served as a support, and thereby secured the safety of the eggs and young. Obviously the situation was chosen to afford daily shade, for as long a period as possible, to the eaglets, which, as the day wore on, suffered intensely from the heat and were shaded by either parent when the afternoon sun shone upon them. It was possible to climb to a north ledge of the rock, immediately over and about a yard above the eyrie, but the whole pillar behind was seamed with a gaping fissure which threatened immediate collapse, while a sheer precipice yawned to the front or west. From this precarious position the accompanying photographs, were, nevertheless, obtained. On March 14 there was a snowstorm from the north, and towards evening the eagles flew slowly across the creek, on which my ranch was situated, when they were observed to tumble and recover themselves in the air, much after the manner of a Marsh Hawk, an evolution which greatly astonished me,

having never previously seen the like with these birds. They first commenced to carry sticks and pine tops to the eyrie on March 15 when there was deep snow, but were forced to suspend operations during a three day blizzard, the material already collected being thereby dispersed.

Not disheartened the birds began building again on March 25, and, as the hen sat on two white, yellow spotted eggs on April 2, they had evidently completed their nest within a week! (Plate III.)

One egg was more heavily blotched than the other, but I have never seen eagles' eggs in Scotland with such pale markings, though I am aware that such occur. The period of incubation was 35 days. The nest, which measured about 5 feet in diameter at the widest part, was constructed of sage brush stalks, greasewood, and pine tops, scantily lined with down from the eagle's breast. Soapweed and more pine tops were added after incubation had commenced, no doubt for the purpose of ornament, as pointed out by Mr. C. J. Cornish in 'Country Life' (London) of June 18, 1904. The same writer mentions an instance in California where the eagles decorated their eyrie with sacks! At first the nest was a rather neatly formed cupped structure precluding accident to the newly hatched young, but by the time the eaglets were a month old the constant trampling of the family had made it perfectly flat. The hen bird allowed me to reach the upper ledge and look over before leaving her eggs, when she would cleverly make a lift backwards with her wings, to clear them, and another, sideways, which floated her into space. She was often immediately joined by the male, and the two would then sail round, ascending in graceful spirals to an immense height, like all species of *Buteo*. Sometimes one bird would hang on the wind above the rock, and, anon rise with motionless wings like an artificial kite, to sink gradually down upon its perch. This was very pretty to witness. I have climbed to the eyrie when the female was apparently asleep, and although the wide awake nestlings would stare at me with wondering eyes, they never, even when six weeks old, communicated my presence to her.

The male eagle took no part in the duties of incubation but helped to brood the young birds and seemed the most assiduous in shading them after June 8 when they were a month old.



FIG. 1. GOLDEN EAGLE EYRIE. THE EGGS HATCHED IN 35 DAYS.



FIG. 2. GOLDEN EAGLE EYRIE. EAGLETS 2 DAYS OLD.



FIG. 1. EAGLETS, 14 DAYS OLD.
Two bull snakes and part of jack-rabbit in the nest, to the right of young.



FIG. 2. EAGLETS, ONE MONTH OLD.
A plucked Sharp-tailed Grouse on further side of nest.

Although previously very wild he now became as tame as his mate and would mount to the small point of projecting rock, which shows plainly in some photographs, while I stood below watching him. Here he cast a shadow on the south side of the eyrie into which the eaglets hastily scrambled, pressing close up against the rock wall under his tail in their eagerness to enjoy the shade. The eagle, being naturally uneasy, would turn about on his pedestal, and regard first the nestlings and then me with that cruel gaze characteristic of his tribe. Powerful binoculars showed every motion at a height where the camera was useless. After the June rains incomparable contrasts of red and green were here presented, vermilion lava-strewn rocks nestling in verdure, and covered with yellow flowers and vetches, while tall cream-colored soap-weeds swayed under the divides.

No trace of food was visible before the eaglets were hatched, but after their arrival the nest always contained either grouse (*Pediceetes phasianellus columbianus*), jack-rabbits, cotton-tails, mountain rats, meadowlarks, or snakes. (Plate IV.) Sometimes, indeed, the putrid remains of all these creatures contaminated the air. The fur of the hares was removed, and the birds plucked clean, before the eaglets were allowed to partake of them, but while mammals and snakes were generally decapitated, the birds were seldom thus treated. No carrion was ever taken to the eyrie, although I knew of 80 cattle carcasses round about, and prairie dogs were also disdained. As I never visited the eyrie without finding a Sharp-tailed Grouse the eagles must levy severe toll on this species, more especially in June when the hens are sitting on from 10 to 15 eggs. On the other hand the eagles captured numbers of rattlesnakes. According to eye-witnesses they feint several times at the snake to make it uncoil and seize it just behind the head with one foot, while gripping it further back with the other. The snake is then taken to a tree or rock and the head torn off, which according to one observer is immediately devoured, before the body is deposited in the eyrie. It is possible that the wing is also used as a shield, after the manner of the African Secretary Bird, but, in any case, I doubt if the rattlesnake could bite through the bird's thick feathers. The eagles' hunted in the early morning or on cool, cloudy days, one, or both, always shading the young from the sun on hot afternoons.

Whether the male or female happened to be frightened from the eyrie by me neither would return if I chanced to be near, and before realizing this fact I wasted hours waiting to see the bird come back, unconscious that the eagle watched for my departure from some lofty pinnacle. At length, however, by searching the badland peaks with my binoculars I discovered the watching bird and the principles of its game.

On the other hand, the parent that happened to be absent on commissariat duty, when I visited the nest, had no scruples about returning to shade the eaglets, and I have known the male to do this before I had ridden 200 yards away, the bird sweeping past to the eyrie with a great rush of wings. When both parents were frightened away I never waited long at the eyrie, believing that the hot sun might kill the eaglets. In keen distress they pressed into the angles of the rock laboriously panting, the water dropping from their mouths, while swarms of flies, attracted by the raw meat odor they exhaled, completed their torment. This determination never to face the sun added to the difficulties of the photographer. (Plate V.)

At first the call of the young for the parents was a piping or whistling on two notes, more like a plover than an eagle, but when they were nearly two months old it became harsh, resembling that of the American Sparrow Hawk. The old birds afforded shade to their young with drooping wings, keeping the breast or tail over them indifferently; but while thus engaged, they had no shade themselves, and they, too, panted with gaping beak which was not becoming to their style of beauty. At a month and eighteen days old, when the male eaglet was still a crouching spiritless object, the female stood boldly in the eyrie and looked something like an adult eagle, as the photograph shows. (Plate VI.) In plumage, as in everything else, she was far in advance of the male, and at two months old (July 8) left the rock to take short flights in the badlands attended by her admiring parents. When tired she perched in a low cedar, at the edge of a ravine, the old birds sitting on the ground beside her. They had now become so accustomed to seeing me as to pay but little attention to my presence. Meanwhile the male eaglet would not leave the rock and did not fly for a week later although hatched at the same time!



EAGLETS IN NEST, ONE MONTH AND 25 DAYS OLD.
They would not face the sun.



FEMALE EAGLET, TWO MONTHS OLD AND ABLE TO FLY.

Both eaglets were caught and could be picked up with bare hands, but, while handled a good deal for the purpose of photography, they never acted on the aggressive, as might have been expected. I had previously found fledglings of *Buteo borealis* and *B. swainsoni* equally submissive, and it may be safely assumed that young eagles and buzzards may be handled with impunity for a time after they have flown.

As the female eaglet was too lively a subject for the camera, the male was photographed on my wife's arm, around which a sack had been wrapped to protect it from the talons. The bird's crop, however, was so enormously distended with grouse that a near view would have been most inartistic. At this time the eaglets appeared to be fed entirely upon Sharp-tailed Grouse which were still plucked for them by the parents. No other remains were seen. I should much like to have witnessed the eagles in pursuit of the grouse, but they hunted at such a long distance from home that I had little opportunity of seeing this particular pair take any quarry. My wife saw one of them stoop at, and miss, a jack-rabbit, which was loping along only about 100 yards distant, on which occasion the intended victim sought refuge in a prairie dog hole. Whereupon the eagle took up its station at the hole waiting for the hare to come out. It may be interesting here to relate a parallel incident in Scotland.

Within the last few years, the Golden Eagle has reëstablished itself in the heart of the deer forest on the Island of Jura, Inner Hebrides, where there are no white hares, and observation has shown that at least one resident pair of eagles feed largely on grouse. My brother has frequently described an eagle 'hawking' grouse just as a Peregrine will do. On one occasion the royal bird, in full chase of a grouse, passed within a few feet of my brother's head, and on another occasion the eagle was surprised sitting on a stone in the heather at about 30 yards distance, when it flew unwillingly away.

Shortly afterwards my brother almost trod upon a cock grouse, lying like a stone in deep heather close to where the eagle had been waiting, and came to the conclusion that the eagle, having hunted the grouse into this thick covert, was waiting, like a cat at a mouse hole, for the quarry to reappear. Owing to the panic

caused by the continued presence of the eagles among the winged game, the grouse gradually left the ground, and a good grouse moor was spoiled in consequence. In this country a similar flight of eagles after a Sage Grouse is recorded by Mr. Ridgway.¹ "A pair — the female leading — were observed to give chase to a sage hen, chasing her on the wing until the fugitive dropped down to the ground from exhaustion, where she was picked up by the foremost of the eagles." There is some evidence that, in Scotland, eagles have struck down both grouse and ptarmigan on the wing, but at present absolute confirmation is lacking. In his letter to 'Country Life' (London), mentioned above, Mr. C. J. Cornish has raised the question of the carrying power of eagles.

Personally I have never known an eagle to carry anything heavier than a seven pound jack-rabbit and would think eighteen pounds (the extreme weight of a jack-rabbit or a Scotch brown hare), to be the extent of the largest eagle's capacity. It follows, therefore, that the lambs taken are very small. Thirty years ago eagles were extremely common on the west coast of Scotland, and during the breeding season each pair taxed the sheep farmer from one to two lambs a day according as game was plentiful or scarce. A war of extermination was waged against them and my uncle, a sheep farmer in Skye, killed to his own gun during his life time 90 eagles in defence of his lambs.

It is gratifying to know that the collapse of sheep-farming in the Scottish Highlands as a profitable industry, and the consequent abandonment to deer of large areas formerly grazed by sheep, has given the Golden Eagle as a species a new lease of life, these birds being now as jealously preserved by owners and lessees of deer forests as they were once ruthlessly destroyed by the sheep-farmers on the same ground.

As regards the changes of plumage in Golden Eagles, the nestlings hatched 'downy white' and remained in this stage for a month, when they were about the size of a Herring Gull, and black feathers appeared in the wings and tail. At six weeks old they had changed almost completely to a black brown, while at

¹ A History of North American Birds, by Baird, Brewer, and Ridgway. Land Birds, Vol. III, p. 319, 1874.

two months they were about three parts grown. At this time a description of their plumage is as follows: Whole body and tail darkest chocolate brown, excepting the fluffy white crop and chin, the latter brown streaked. Legs dull white, streaked with pale brown in the male, and tawny in the female. Iris dark hazel; bill bluish slate; cere and angle of mouth yellow; claws black.

In 1903 observations could only be made on the female eaglet after it had moulted, as the male was killed by a shepherd before it could fly, as above stated. In this bird, which lingered about my ranch until April, the basal two thirds of the tail became white, and she showed a great deal of white under the primaries and elsewhere when flying, which was otherwise unobservable.

Her mother was, apparently, but two years old in the spring of 1903, and while, in 1904, I often approached within a yard I saw no concealed white, as she flew off, which seems to show that this is lost after the second moult. On the other hand, as the white band encompasses nearly half of her tail, I am led to suppose that maturity is reached at about five years but would be glad to know the real facts. The male, which was seen in immature plumage for two years, moulted into full adult dress in 1903, and being more than twice the age of his mate eclipses her in size and appearance although the reverse is usually the case. Absence of white anywhere on the body easily distinguishes him, the entire tail looking black, although it may be marbled with brown, and while the crown and nape (the cowl), are really cream color they look white at a distance in marked contrast to black cheeks and chin.

In the early nineties eagles were very common in Montana and very tame, but became almost exterminated as a result of the high bounties placed on wolves. At this period eastern Montana swarmed with professional wolfers, occupied in destroying wolves by poison and otherwise so that no one could keep dogs at all, and the game, as well as the eagle, was almost wiped out.

A wolver would "string out a line of baits," as he called it, from one creek to another; which simply meant that deer and antelope were shot down wholesale in a line across country, the carcasses filled with strychnine, and the poisoned baits scattered around. When the weather became too cold for strychnine to

work effectually, the wolfers started trapping, and great numbers of Golden Eagles, as also Magpies, fell victims to the process which by their flapping prevented the suspicious wolves from approaching the bait. I was constantly with trappers and know that their average catch was from three to six eagles apiece every winter. Sometimes an eagle would leave a toe in the trap, but more often they were caught by both legs — springing a second trap in the struggle to free the imprisoned leg from the first. Carcasses of range cattle, which succumbed in hundreds to blizzards and starvation, provided the eagles with an ample supply of beef, but their preference for the venison with which the traps were baited proved their destruction — the violent struggles of the trapped victim making even a quick release futile. Magpies were entirely exterminated on the south side of the Yellowstone, and, although eagles just survived, fifty or sixty must have perished annually in my locality alone from poison and traps combined. Had not, indeed, the appropriation for bounties become exhausted the last named birds could hardly have escaped total extinction; but as the wolfers were latterly paid in scrip, which they cashed at a loss, they became disheartened, and the eagles were respited. It may be mentioned that during 1897, 22,082 coyotes and 6,112 wolves were killed in the State, and in November, 1898, bounty claims amounting to \$70,000 were not only still unpaid, but were continually increasing. A fresh impetus was given to wolfers in 1901 and 1902, by the uniform bounty of five dollars each fixed on wolves and coyotes, and I doubt if there are now half-a-dozen pairs of eagles within a 50 mile radius of Terry, where once they were common. There is no creature more easy to trap than an eagle, which feeds on carrion as readily as a vulture. In the winter of 1893 when I was setting traps around a dead deer which had been visited the previous evening by numerous suspicious wolves, an eagle was observed to watch the proceedings from a pine close by, and the same bird alighted subsequently to its doom. In the Highlands of Scotland a common and favorite bait with the preserver of game was a dead cat, the success of which may possibly be due to the fact that it resembles a mountain hare, the principal food of the mountain-dwelling eagle. When staying with my brother

in Scotland during May, 1889, four Golden Eagles were caught on an adjoining estate by means of a single dead cat.

The total extermination of eagles would be to my mind an indescribable calamity, as wherever wild regions are found, either in the Rocky Mountains, the Scottish Highlands, or the badlands, the appearance of an eagle puts the finishing touch to the grandest and most impressive scene.

NOTES CONCERNING CERTAIN BIRDS OF LONG ISLAND, N. Y.

BY WILLIAM C. BRAISLIN, M. D.

IN THE accompanying notes data concerning some of the common gulls of our coast are presented for the purpose of emphasizing the favorable results, evident even to the casual observer, which have been produced by the passage of laws of greater stringency for the better protection of these birds. The enactment of these, together with the conviction and fining of a few flagrant offenders through the activity of the Chairman of the National Association of Audubon Societies, Mr. William Dutcher, have been of evident benefit to birds, in that gulls have been seen more or less commonly the past summer through, along the whole south shore of the island.

The passage of the law preventing spring shooting of ducks seems likewise to have been beneficial. Sportsmen and baymen are unanimous in their opinion that ducks have been more abundant in the Great South Bay this autumn than usual. It is possible that other factors have combined with the law to bring about this immense increase in the number of ducks this autumn. At any rate the facts are a strong argument against the repeal of this law, which latter many short-sighted Long Islanders desire. Brief references to a few other species are given for reasons which are evident in the text.